



### Preliminary Technical Information

The information in this document reflects preliminary data. Items including polar plots, frequency, phase and impedance response graphs will be added when final data are available.

### Key Features

- BroadBeamHP® waveguide technology delivers a consistent dispersion pattern for maximum coverage area per speaker (up to 10 kHz, EASE™ documented).
- 66 Watt transformer and high output (113 dB) for the sound reinforcement and PA markets.
- One 165 mm (6.5 in) treated fiber driver and one compression driver with a 25.4 mm (1 in) exit mounted to a proprietary cast-aluminum M6™ baffle and heat sink.
- 93 dB Average sensitivity offers high-output capabilities and reduced amplification costs.
- Separate tool-free magnetic grille & bezel assembly for ease of install and in-field painting.
- Iridite-plated, steel grille with protective powder-coated finish for lasting durability.
- Rapid-installation blind mount fixed wing mounting mechanism with constant tension design affixes to ceiling thickness tolerances ranging from 6.4 mm (0.25 in) to 42.9 mm (1.69 in).
- UL 2043 pending.
- Included accessories: Tile bridge, Euroblock connector & paint mask/installation aid.
- Optional accessories: Pre-Construction Bracket & Junction Box.
- High quality black or white paint finish.

### Specifications: CM690i

### Tile bridge included

System Type	6.5" Coax, compression tweeter w/ 1" exit, in-ceiling, ported (66 Watt transformer for 25/70.7/100 Volt or voice coil / 8 Ohm direct)
Frequency Response (-3 dB) <sup>1</sup>	72 Hz - 22 kHz
Low Frequency (-10 dB) <sup>1</sup>	64 Hz - 22 kHz
Max. Program Power	200 Watts
Max. Continuous Power RMS <sup>2</sup>	100 Watts
Max. UL program power <sup>3</sup>	70 Watts
Max. SPL dB @ 1 M	113 dB
Sensitivity dB @ 1W/1M <sup>4</sup>	93 dB
Impedance (nominal)	8 Ohm
Coverage Angle (-6 dB @ 2 kHz)	120°
Coverage Angle (-6 dB @ 8 kHz)	150°
Directivity Factor (Q)	4.97 (Averaged 100 Hz - 10 kHz); 6.47 @ 2 kHz
Directivity Index (DI)	6.22 dB (Averaged 100 Hz - 10 kHz); 8.11 dB @ 2 kHz
Tap Selector	6-Position rotary switch with voice coil direct (8 Ohm)

### Transformer Taps

70.7 V	Output	100 V	Output	25 V	Output
66 W	111 dB	66 W	111 dB	5 W	100 dB
35 W	108.5 dB	35 W	108.5 dB	2.5 W	97 dB
19 W	106 dB	19 W	106 dB	1.25 W	94 dB
10 W	103 dB	10 W	103 dB	0.75 W	92 dB
5 W	100 dB				

### Transducers

Low Frequency	1 x 165 mm (6.5 in) Treated fiber cone, cloth surround
High Frequency	1 Compression driver with waveguide and a 25.4 mm (1") exit
Low Frequency Voice Coil	34 mm (1.36 in)
Crossover Frequency	3 kHz

### Network Type

Low Pass	18 dB per octave, 3rd order
High Pass	18 dB per octave, 3rd order
Enclosure Material	Drawn aluminum backcan with ABS baffle
Motor-Board	Cast aluminum
Grille	Iridite-plated steel with powder-coat finish
Inputs	4 Pin, 5 mm Euroblock for individual or daisy chain connection
Colors	Black or white
Backcan Diameter	296.7 mm / 11.68 in
Backcan Height	201.7 mm / 7.94 in
Visible Diameter	375.0 mm / 14.76 in
Visible Height	27.5 mm / 1.08 in
Weight	5.8 kg / 12.8 lbs
Shipping Weight	N/A

### Accessories

Included	Tile bridge, Euroblock connector, back cover plate & installation aid
Optional	Pre-Construction Bracket (AC-CM8-PCB), Junction Box (AC-CM-JBOX)
Packaging	2 per box

<sup>1</sup> Frequency response is measured in half space and includes a low-frequency peak > +3 dB.

<sup>2</sup> Continuous power rating, EIA-426-B test.

<sup>3</sup> UL testing specifies band-limited pink noise over the indicated frequency spectrum.

<sup>4</sup> 2.83 Volts at a distance of 1 meter.

SoundTube continually develops new product innovations and improvements. Updates to existing products without prior notice are an example of SoundTube's drive for constant improvement.

### Description

The CM690i is a premium 6.5" 2-way, in-ceiling, high-efficiency, high-SPL loudspeaker for distributed or 8 Ohm applications. The CM690i incorporates a dedicated 6.5" treated fiber driver and high-power compression transducer with a BroadBeamHP® waveguide to deliver a consistent dispersion pattern and superb intelligibility for the foreground music, sound reinforcement and PA markets. The CM690i incorporates a 66 Watt transformer with a 6-position tap switch and voice coil/8 Ohm direct position. Mounting hardware and tile-bridge are included and feature a fast and secure constant-tension fixed wing mounting system.

**Frequency Response****N/A****Phase/Impedance Reponse****N/A****Beamwidth (-6 dB)****N/A****Applications**

Engineered for installations requiring full-range background/foreground music plus paging, the CM690i delivers a smooth and even coverage pattern. Ideal for casinos, convention centers, warehouses, nightclubs, gyms, aerobic rooms, airports, super stores, arenas, theme parks, transportation and shipping centers, stadiums and other high-SPL or long-throw applications.

For professional sound reinforcement applications, the CM690i includes a cast-aluminum M6™ motor-board, iridite-plated, powder-coated steel grille and a durable aluminum enclosure design.

**BroadBeamHP® Wide Dispersion Technology**

SoundTube's proprietary BroadBeamHP® technology incorporates a high-frequency compression driver with a 1" exit mated to a treated fiber woofer. BroadBeamHP® technology delivers a 90° dispersion pattern across the upper registers of the frequency spectrum (up to 10 kHz, EASE™ documented). The result

**Directivity Index (DI)****N/A**

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is an audio system with fewer speakers, reduced power needs, shorter installation time and cost savings on shipping and labor.

### Patented SoundTube Technologies

SoundTube entertainment is consistently developing new technologies that enhance audio product performance. SoundTube Entertainment innovations are protected by multiple U.S. and international patents, which explicitly cover SoundTube dome, enclosure mounting and dispersion technologies. SoundTube Entertainment actively defends its patents in order to protect SoundTube resellers and end-users.

### Technical Data and Specification Tools

#### Technical Data

SoundTube Entertainment strives to provide complete and effective technical information and data to dealers, engineers and designers. All data are available from SoundTube Entertainment or at [www.soundtube.com](http://www.soundtube.com).

### Data Acquisition

All performance data acquired at SoundTube's Technical Measurement Center (TMC) are analyzed using a variety of standard measurement techniques, including Measured Length Sequence (MLS) and Time Delay Spectrometry (TDS). Performance, development and data acquisition tools include: Gold Line TEF 20, CLIO, LMS, LEAP, and proprietary modeling software. EASE™ data are acquired through an automated TEF 20/Outline/EASE™ interface.

**EASE™ Data** – 3-D polar plots.

**SoundTubeSPEC™** – Proprietary SoundTube speaker placement software.

### Architectural Specifications

The loudspeaker shall consist of a 165 mm (6.5 in) low-frequency transducer and a high frequency transducer with a 1" exit and a frequency-dividing network installed in a ported enclosure. The low-frequency voice coil diameter shall be 34 mm (1.36 in).

The performance specifications of a typical production unit shall be as follows: Useable frequency response shall

extend from 64 Hz – 22 kHz (-10 dB, no external equalization). Measured sensitivity (2.83 Volt input, 1 meter) shall be at least 93 dB. The speaker shall have a nominal impedance of 8 Ohms and be available for 25/70.7/100 Volt modes with a voice coil/8 Ohm direct. The frequency-dividing network shall have a crossover frequency of 3 kHz with a slope of 18 dB per octave (3rd order). Rated power capacity shall be at least 100 Watts continuous power (RMS), and conform to EIA-426-B testing. Maximum continuous output at 1 meter shall be 113 dB.

The low-frequency transducer shall have a treated fiber cone and cloth surround.

Installation for the CM690i shall be by 2-screw blind mount, constant tension winged assembly and shall attach to ceiling thickness tolerances ranging from 6.4 mm (0.25 in) to 42.9 mm (1.69 in). The external wiring input connector shall be a 4-pin, 5 mm Euroblock connector for 8 Ohm or distributed systems and shall accept from 10 – 22 gauge wire. The maximum backcan dimension shall be no more than 201.7 mm (7.94 in) in height by 296.7 mm (11.68 in) in diameter. The maximum

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### Polar Plots

**N/A**

# CM690i

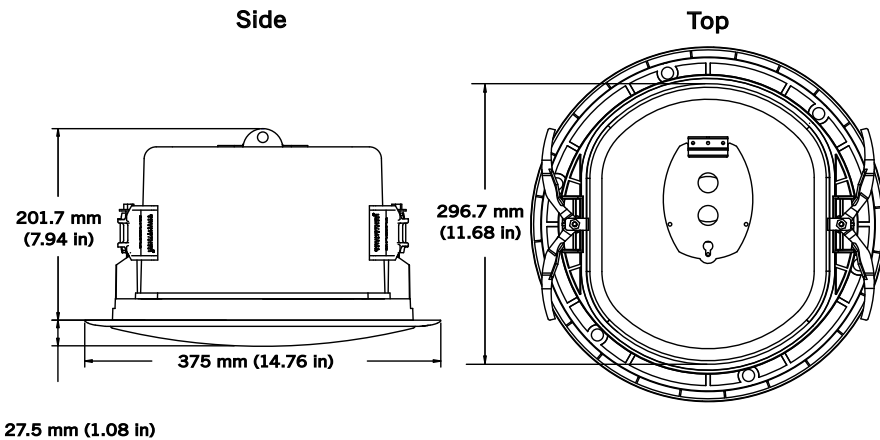
## In-Ceiling Speaker

Preliminary Technical Information for System Engineers



**SOUNDTUBE**  
ENTERTAINMENT

### Mechanical Drawings



visible dimensions shall be no more than 27.5 mm (1.08 in) in height by 375 mm (14.76 in) in diameter. The backcan shall be constructed of aluminum.

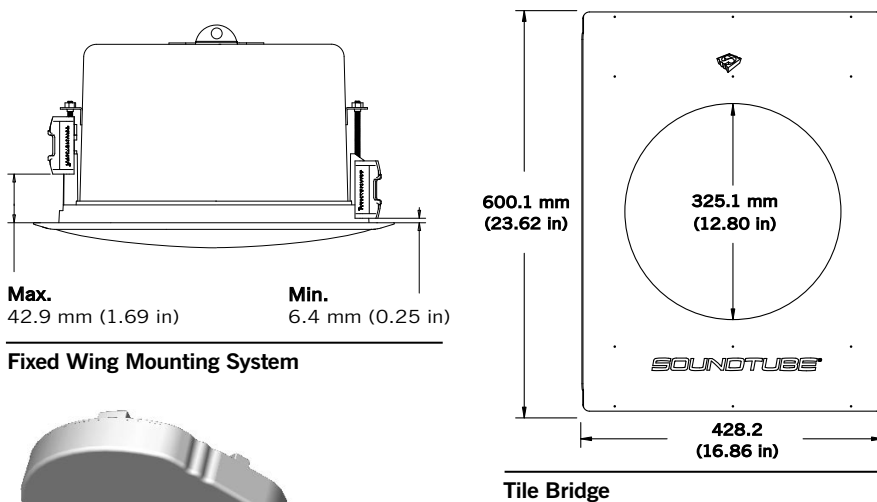
The system shall include a 16-gauge painted steel support backing plate (tile bridge) to reinforce the ceiling material and tile support rails. The maximum tile bridge dimensions shall be no more than 600.1 mm (23.62 in) in length by 428.2 mm (16.86 in) in width and 10.4 mm (0.41 in) in thickness with a 325 mm (12.80 in) cutout for speaker mounting.

The grille shall be constructed of iridite-plated, powder-coated steel with an ABS bezel. The affixed grille and bezel shall be mounted to the speaker enclosure (backcan) via magnetic attachment and include a safety wire. Also included are a paint mask for in-field painting and an installation aid that serves as a handhold during mounting.

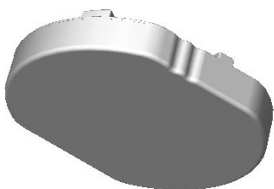
The CM690i has an optional Pre-Construction Bracket (AC-CM8-PCB) that shall be compatible with an optional Junction Box (AC-CM-JBOX). An 18-gauge wire whip and Euroblock connector shall be included with the Junction Box. The maximum dimensions of the Pre-Construction Bracket shall be no more than 635 mm (25 in) in length by 457.2 mm in width and 127 mm (5 in) in thickness with a 326.1 (12.85 in) cutout for speaker mounting.

The system shall be the CM690i with mounting hardware for both low- and high-impedance applications.

### Included Accessories

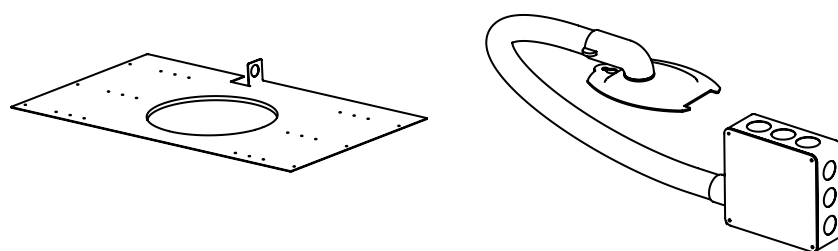


### Fixed Wing Mounting System



### Paint Mask

### Optional Accessories



Pre-Construction Bracket (AC-CM8-PCB)

Junction Box (AC-CM-JBOX)

### SoundTube Entertainment

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**All SoundTube products come with a 5-year limited warranty.**

SoundTube Entertainment manufactures a complete line of speakers for:  
**Open-Ceiling • In-Ceiling • Surface-Mount • Outdoor • Sound-Focusing**

All SoundTube products are designed and engineered in the USA.